

WHAT IS CLAIMED IS:

1. An isolated nucleic acid encoding a TfR2 polypeptide.
2. The isolated nucleic acid of claim 1, wherein the nucleic acid comprises DNA.
3. The isolated nucleic acid of claim 2, wherein the DNA is a cDNA.
4. The isolated nucleic acid of claim 2, wherein the DNA encodes a polypeptide having the amino acid sequence set forth in SEQ ID NO:1.
5. The isolated nucleic acid of claim 2, wherein the DNA has substantially the same nucleotide sequence as the sequence set forth in SEQ ID NO:2 or SEQ ID NO:3.
6. A recombinant expression vector comprising DNA of claim 2.
7. A host cell containing a vector of claim 6, wherein the cell is a procaryotic cell or a eucaryotic cell.
8. A host cell of claim 7, wherein the cell expresses a functional TfR2 protein.
9. Isolated mRNA complementary to DNA of claim 2.
10. An oligonucleotide composition comprising chemical analogues of the nucleic acid of claim 2 operatively linked to a promoter of RNA transcription.
11. An antisense oligonucleotide capable of specifically binding to and inhibiting the translation of mRNA of claim 9.
12. An isolated TfR2 polypeptide, or fragments thereof, and functional equivalents thereof.
13. The isolated TfR2 polypeptide of claim 12 having at least substantially the same amino acid sequence as that set forth in SEQ ID NO:1.

14. The isolated TfR2 polypeptide of claim 12 being encoded by at least the nucleotide set forth in SEQ ID NO:2 or SEQ ID NO:3.
15. A TfR2 polypeptide expressed recombinantly in a host cell.
16. An antibody that specifically binds to a determinant on a TfR2 polypeptide of claim 12 or active fragment thereof.
17. The antibody of claim 16, wherein the antibody is a monoclonal antibody.
18. The antibody of claim 16, wherein the antibody is a polyclonal antibody.
19. A composition comprising an amount of the antisense oligonucleotide of claim 11 effective to modulate expression of a TfR2 polypeptide and an acceptable hydrophobic carrier capable of passing through a cell membrane.
20. A composition comprising an amount of an antibody of claim 16 effective to block the function of the TfR2 protein or to block interaction of the TfR2 protein with other proteins or ligands.
21. A method for detecting the presence of TfR2 protein on a cell surface comprising the steps of:
- (a) providing an antibody specific for TfR2 protein,
  - (b) contacting the cell with the antibody under conditions that allow the binding of the antibody to the TfR2 protein of the cell, and
  - (c) detecting the antibody bound to the cell.
22. The method of claim 21, wherein the antibody is labeled with a detectable marker.

23. The method of claim 22, wherein the detectable marker is selected from a group consisting of radionucleotides, enzymers, fluorogens, chromogens, and chemiluminescent labels.

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B'  
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C<sub>2</sub>